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EXAMINER

KURR, JASON RICHARD

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/715,123	Applicant(s) VOSBURGH ET AL.	
	Examiner JASON R. KURR	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-17, 23 and 37-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 52 and 53 is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-17, 23, 37-48, 51 and 54-55 is/are rejected.
- 7) ☒ Claim(s) 49 and 50 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 9, 11-14, 17-18, 37-47 and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Landis (US 5,691,514).

With respect to claim 11, Landis discloses a device for generating a directional sound environment, the device comprising: a headgear unit (fig.1 #16); a pinna (fig.1 #12) on the an outer surface of the headgear unit; a microphone (fig.1 #14) positioned adjacent the pinna; and a speaker (fig.1 #32b) positioned in an interior of the headgear unit, wherein the microphone is configured to receive a sound signal and the speaker is configured to generate sound inside the headgear unit (col.4 ln.40-52); wherein the pinna has a filtering surface and serves as an analog filter to provide filtered sound to the microphone (col.3 ln.19-37), the filtered sound being a representation of natural hearing.

With respect to claim 12, Landis discloses the device of claim 11, wherein the device further comprises a processor configured to apply a transfer function to the received sound signal to provide a transformed sound signal, the transformed sound

signal providing an approximation of free field hearing sound at a subject's ear inside the headgear unit (col.4 ln.48-52).

With respect to claim 13, Landis discloses the device of claim 12, wherein the transfer function is based on an experimentally determined propagation effect from sound propagating to an opening of an ear canal and substantially omitting propagation interference from the headgear unit (col.4 ln.48-52). It is implied that the disclosed amplifier does not account for interference from the headgear unit, it merely adjusts the gain of the signal to be reproduced by the speakers.

With respect to claim 14, Landis discloses the device of claim 12, including a plurality of microphones positioned at locations on the headgear unit, the locations being selected to provide sufficient sound information to provide an approximation of free field hearing sound (col.3 ln.35-37).

With respect to claim 17, Landis discloses the device of claim 12, wherein the headgear unit comprises a helmet (fig.1 #16).

With respect to claim 18, Landis discloses the device of claim 11, wherein the headgear unit is substantially soundproof in a frequency range (fig.1 #28a,b). It is implied that Landis' helmet ear guards act as a passive sound canceller, which is **substantially** sound proof within a frequency range.

With respect to claim 37, Landis discloses the device of claim 11, wherein the pinna **approximates** the shape of a human ear (fig.1 #12).

With respect to claim 38, Landis discloses the device of claim 37, including an earphone including an in-ear-portion, wherein the speaker is configured to generate

sound through the in-ear-portion (fig.1 #32b).

With respect to claim 39, Landis discloses the device of claim 37, wherein the pinna **approximates** the shape of an average human ear (fig.1 #12).

With respect to claim 40, Landis discloses the device of claim 37, wherein the pinna **approximates** the shape of an ear of an individual intended to wear the headgear unit (fig.1 #12).

With respect to claim 41, Landis discloses the device of claim 40, including an earphone including an in-ear-portion, wherein the speaker is configured to generate sound through the in-ear-portion (fig.1 #32b).

With respect to claim 42, Landis discloses the device of claim 11, including an earphone including an in-ear-portion, wherein the speaker is configured to generate sound through the in-ear-portion (fig.1 #32b).

With respect to claim 43, Landis discloses a method for generating a directional sound environment, the method comprising: providing a device including: a headgear unit (fig.1 #16); a pinna (fig.1 #12) on an outer surface of the headgear unit; a microphone (fig.1 #14) positioned adjacent the pinna; and a speaker (fig.1 #32b) positioned on an interior of the headgear unit; detecting a sound signal from the microphone; and generating sound inside the headgear unit from the speaker (col.4 ln.40-52); wherein the pinna has a filtering surface and serves as an analog filter to provide filtered sound to the microphone (col.3 ln.19-37), the filtered sound being a representation of natural hearing.

With respect to claim 44, Landis discloses the method of claim 43, wherein the pinna **approximates** the shape of a human ear (fig.1 #12).

With respect to claim 45, Landis discloses the device of claim 44, including an earphone including an in-ear-portion, wherein the speaker is configured to generate sound through the in-ear-portion (fig.1 #32b).

With respect to claim 46, Landis discloses the method of claim 44, wherein the pinna **approximates** the shape of an average human ear (fig.1 #12).

With respect to claim 47, Landis discloses the method of claim 44, wherein the pinna **approximates** the shape of an ear of a specific individual intended to wear the headgear unit (fig.1 #12).

With respect to claim 51, Landis discloses the device of claim 43, including an earphone including an in-ear-portion, wherein the speaker is configured to generate sound through the in-ear-portion (fig.1 #32b).

With respect to claim 1, Landis discloses the method of claim 43 wherein the headgear unit includes a plurality of microphones thereon, the method including: detecting a sound signal from the plurality of microphones (col.3 ln.35-37); and applying a transfer function to the sound signal to provide a transformed sound signal, the transformed sound signal providing an approximation of free field hearing sound at a subject's ear inside the headgear unit (col.4 ln.48-52).

With respect to claim 2, Landis discloses the method of claim 1, wherein the transfer function is based on an experimentally determined propagation effect from sound propagating to an opening of an ear canal and substantially omitting propagation

interference from the headgear unit (col.4 ln.48-52). It is implied that the disclosed amplifier does not account for interference from the headgear unit, it merely adjusts the gain of the signal to be reproduced by the speakers.

With respect to claim 3, Landis discloses the method of claim 1, further comprising generating sound inside the headgear unit responsive to the transformed sound signal (col.4 ln.40-52).

With respect to claim 4, Landis discloses the method of claim 1, wherein the headgear unit comprises a protective helmet (fig.1 #16).

With respect to claim 5, Landis discloses the method of claim 1, wherein the plurality of microphones are positioned at locations on the headgear unit, the locations being selected to provide sufficient sound information to provide an approximation of free field hearing sound (col.3 ln.35-37).

With respect to claim 9, Landis discloses the method of claim 1, wherein the headgear unit is substantially sound-proof in a frequency range (fig.1 #28a,b). It is implied that Landis' helmet ear guards act as a passive sound canceller, which is **substantially** sound proof within a frequency range.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-7, 15-16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Landis (US 5,691,514) in view of Kanevsky et al (US 7,003,123 B2).

With respect to claim 15, Landis discloses the device of claim 12, however does not disclose expressly wherein the processor is further configured to reduce an amplitude of a portion of the sound signal if the amplitude is higher than a threshold level.

Kanevsky discloses a volume regulating and monitoring system for a headset, wherein a processor is configured to reduce an amplitude of a portion of the sound signal if the amplitude is higher than a threshold level (col.2 ln.60-67, col.3 ln.1-26). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the volume regulating circuit of Kanevsky in the device of Landis. The motivation for doing so would have been prevent dangerous levels of sound from damaging a user's ears.

With respect to claim 16, Landis discloses the device of claim 12, however does not disclose expressly wherein the processor is further configured to cancel the amplitude of a portion of the sound signal.

Kanevsky discloses a volume regulating and monitoring system for a headset, wherein a processor is configured to cancel the amplitude of a portion of the sound signal (col.2 ln.60-67, col.3 ln.1-26). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the volume regulating circuit of

Kanevsky in the device of Landis. The motivation for doing so would have been prevent dangerous levels of sound from damaging a user's ears.

With respect to claim 23, Landis discloses the device of claim 11, however does not disclose expressly wherein the processor is further configured to cancel the amplitude of selected sound signals.

Kanevsky discloses a volume regulating and monitoring system for a headset, wherein a processor is configured to cancel the amplitude selected sound signals (col.2 ln.60-67, col.3 ln.1-26). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the volume regulating circuit of Kanevsky in the device of Landis. The motivation for doing so would have been prevent dangerous levels of sound from damaging a user's ears.

With respect to claim 6, Landis discloses the method of claim 1, however does not disclose expressly wherein applying a transfer function further comprises reducing the amplitude of a portion of the sound signal if the amplitude is higher than a threshold level.

Kanevsky discloses a volume regulating and monitoring system for a headset, wherein a processor is configured to reduce an amplitude of a portion of the sound signal if the amplitude is higher than a threshold level (col.2 ln.60-67, col.3 ln.1-26). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the volume regulating circuit of Kanevsky in the device of Landis. The motivation for doing so would have been prevent dangerous levels of sound from damaging a user's ears.

With respect to claim 7, Landis discloses the method of claim 1, however does not disclose expressly wherein applying a transfer function further comprises canceling the amplitude of portions of sound signals.

Kanevsky discloses a volume regulating and monitoring system for a headset, wherein a processor is configured to cancel the amplitude of a portion of the sound signal (col.2 ln.60-67, col.3 ln.1-26). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the volume regulating circuit of Kanevsky in the device of Landis. The motivation for doing so would have been prevent dangerous levels of sound from damaging a user's ears.

Claims 54 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Landis (US 5,691,514) in view of Feng et al (US 6,978,159 B2).

With respect to claim 54, Landis discloses the device of claim 11 further including: a second speaker (fig.1 #32a,b) positioned in the interior of the headgear unit.

Landis does not disclose expressly a second pinna on the outer surface of the headgear unit opposite the first pinna; a second microphone positioned adjacent the second pinna wherein the second microphone is configured to generate sound inside the headgear unit; and wherein the second pinna has a filtering surface and serves as an analog filter to provide filtered sound to the second microphone, the filtered sound being a representation of natural hearing.

Feng discloses a binaural signal processing technique implementing two microphones (fig.10 #22,24) to reproduce a desired signal from a noisy environment

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(col.3 ln.23-39). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the dual microphone system of Feng in two separate wind cups (#12) so as to receive sound in two separate directions. The motivation for using the microphone setup of Feng would have been to localize the desired acoustic source, thus optimizing reception of a desirable acoustic signal.

With respect to claim 55, Landis discloses the device of claim 43 further including: a second speaker (fig.1 #32a,b) positioned in the interior of the headgear unit.

Landis does not disclose expressly a second pinna on the outer surface of the headgear unit opposite the first pinna; a second microphone positioned adjacent the second pinna wherein the second microphone is configured to generate sound inside the headgear unit; and wherein the second pinna has a filtering surface and serves as an analog filter to provide filtered sound to the second microphone, the filtered sound being a representation of natural hearing.

Feng discloses a binaural signal processing technique implementing two microphones (fig.10 #22,24) to reproduce a desired signal from a noisy environment (col.3 ln.23-39). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the dual microphone system of Feng in two separate wind cups (#12) so as to receive sound in two separate directions. The motivation for using the microphone setup of Feng would have been to localize the desired acoustic source, thus optimizing reception of a desirable acoustic signal.

Allowable Subject Matter

Claims 49-50 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 52-53 are allowed.

Response to Arguments

Applicant's arguments filed February 27, 2008 have been fully considered but they are not persuasive.

With respect to claims 11 and 43, the Applicant has amended the limitation, "the filtered sound being a representation of natural hearing" into each claim. The Examiner does not believe that such a limitation overcomes the prior art of record, more specifically the disclosure of Landis (US 5,691,514). The term "a representation of natural hearing" is not clearly defined so as to exclude the reproduced sound Landis. Too what degree does the filtered sound have to reach in order to represent natural hearing? The acoustic receiver cup of Landis picks up natural sounds and transmits them to the earpieces, where the sounds are reproduced as a representation of the picked up natural sound, thus Landis anticipates any representation of natural sound.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON R. KURR whose telephone number is (571)272-0552. The examiner can normally be reached on M-F 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 273-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason R Kurr/
Examiner, Art Unit 2615

/Vivian Chin/

Supervisory Patent Examiner, Art Unit 2615